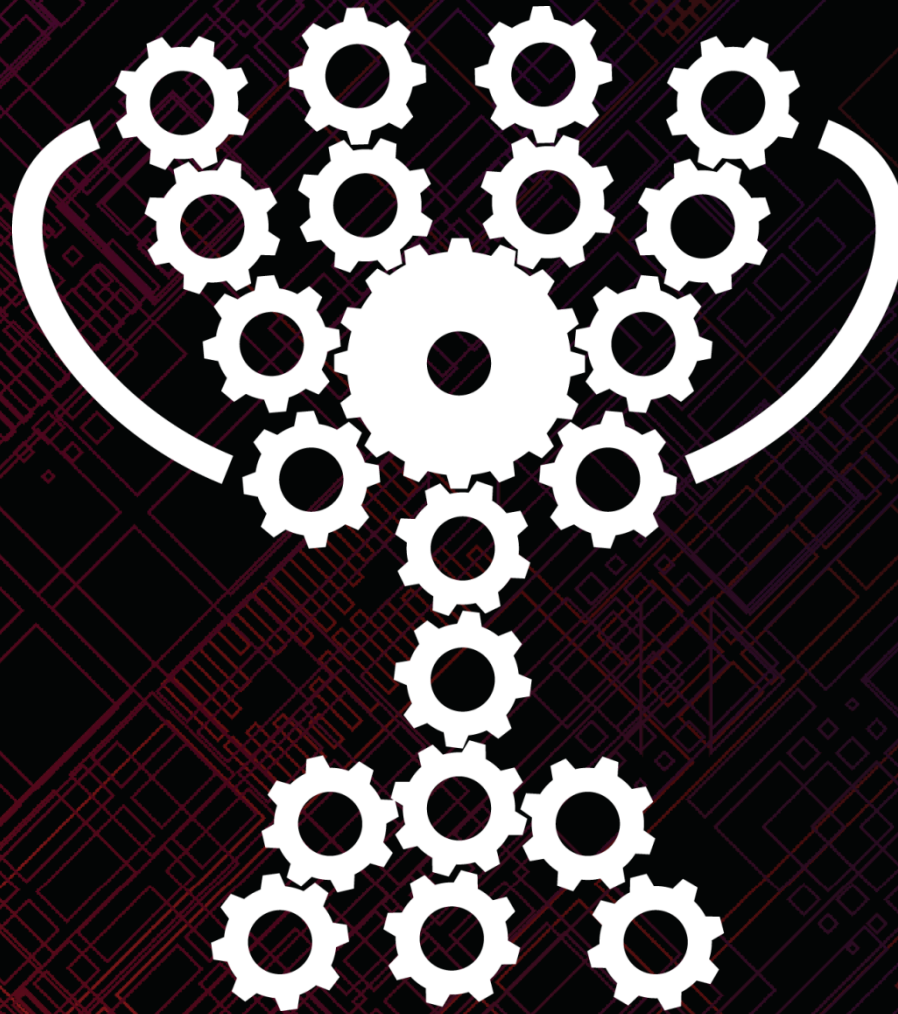


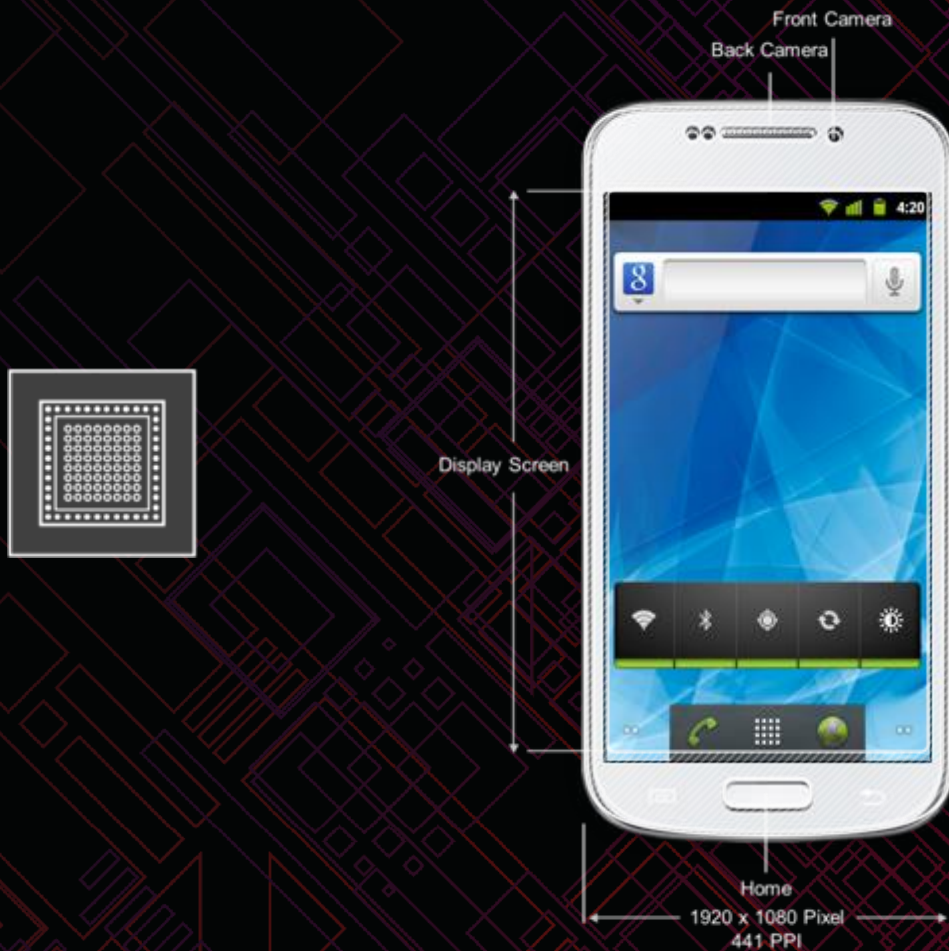
Technology Seminar Lausanne, Switzerland Oct 2014

Dr. Maria Marced
President , TSMC Europe BV

Collaborate for Your Success



Customer's Design-In

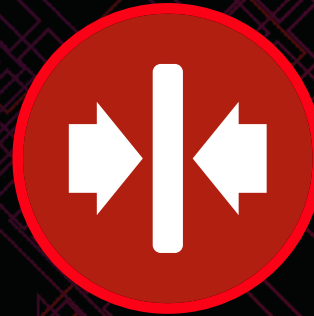




Faster



Lighter



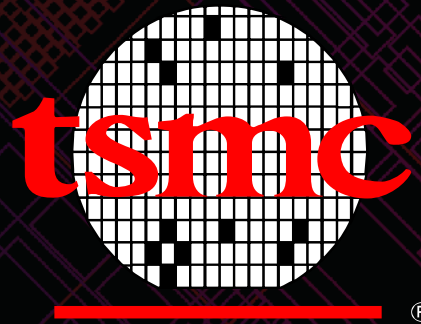
Thinner



Less

TSMC's Mission

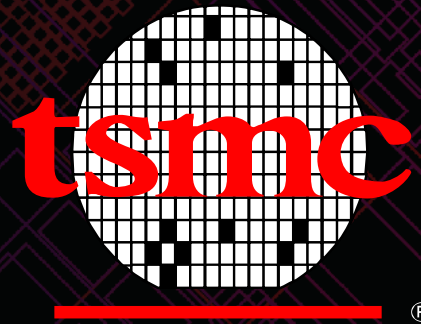
Our mission is to be the trusted
technology and capacity provider
for the global logic IC industry
for years to come.



**27 years of
collaboration experience**

THE DEDICATED TEAM

1,000 scientists and engineers

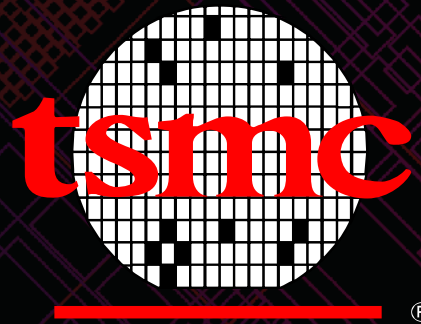


Scale Advantages

IN THE OIP ECOSYSTEM



- **Wide application coverage**
- **Deep technology integration experience**
- **More than 100 ecosystem partners**
- **Majority of partner resources**



Scale Advantages

IN PRODUCTION

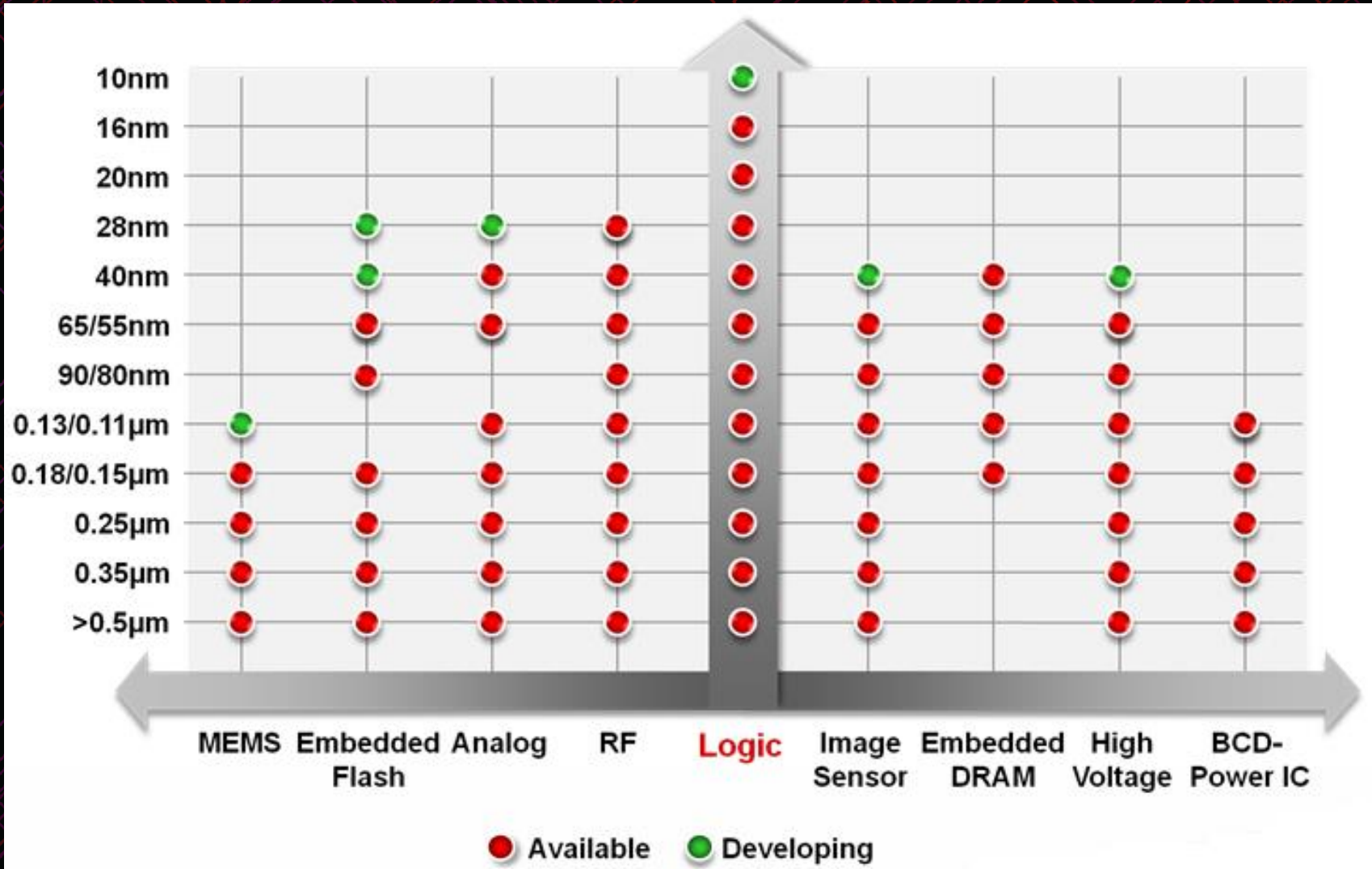


- **Ample capacity**
- **Unrivalled flexibility**
- **Faster yield learning**

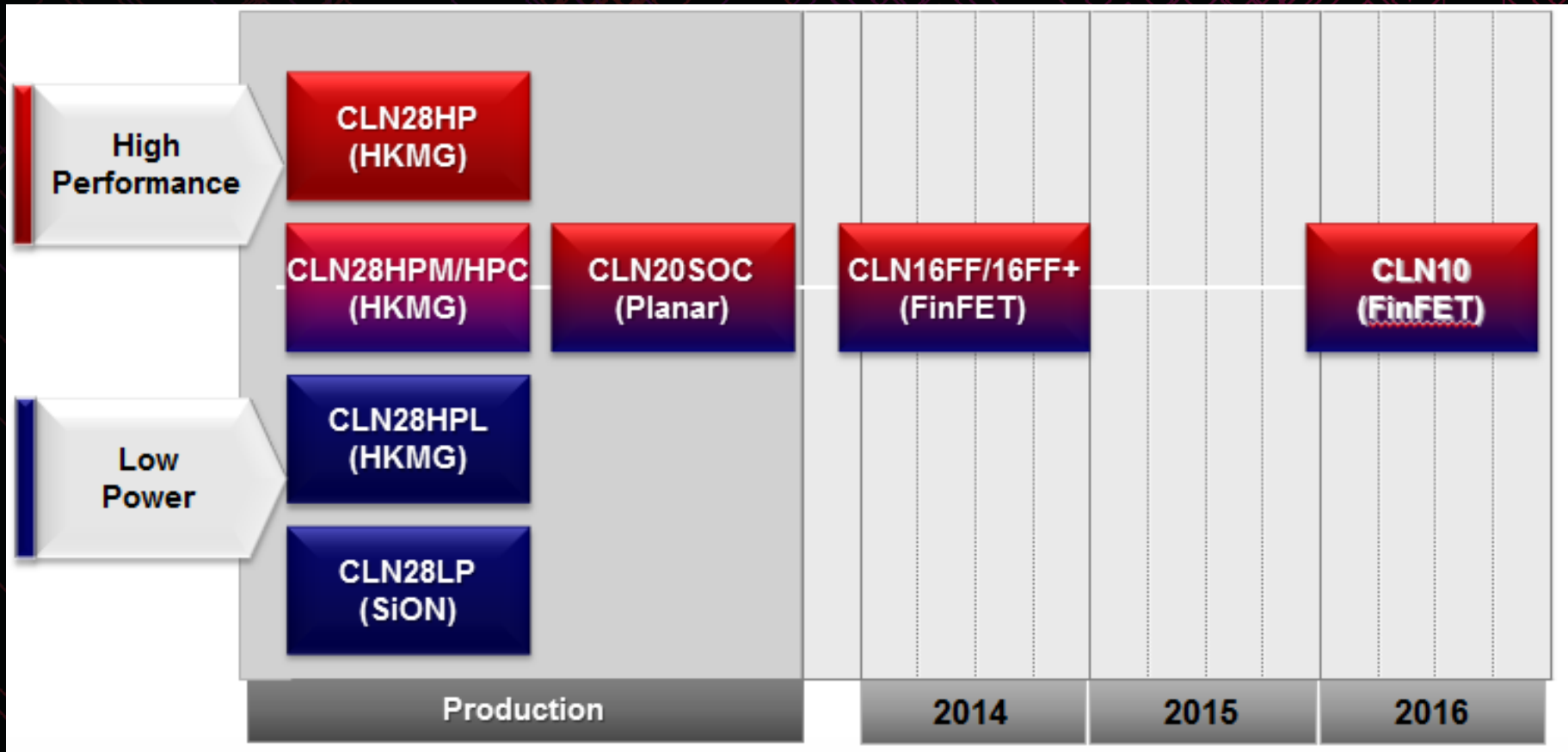


Spæled
your productization

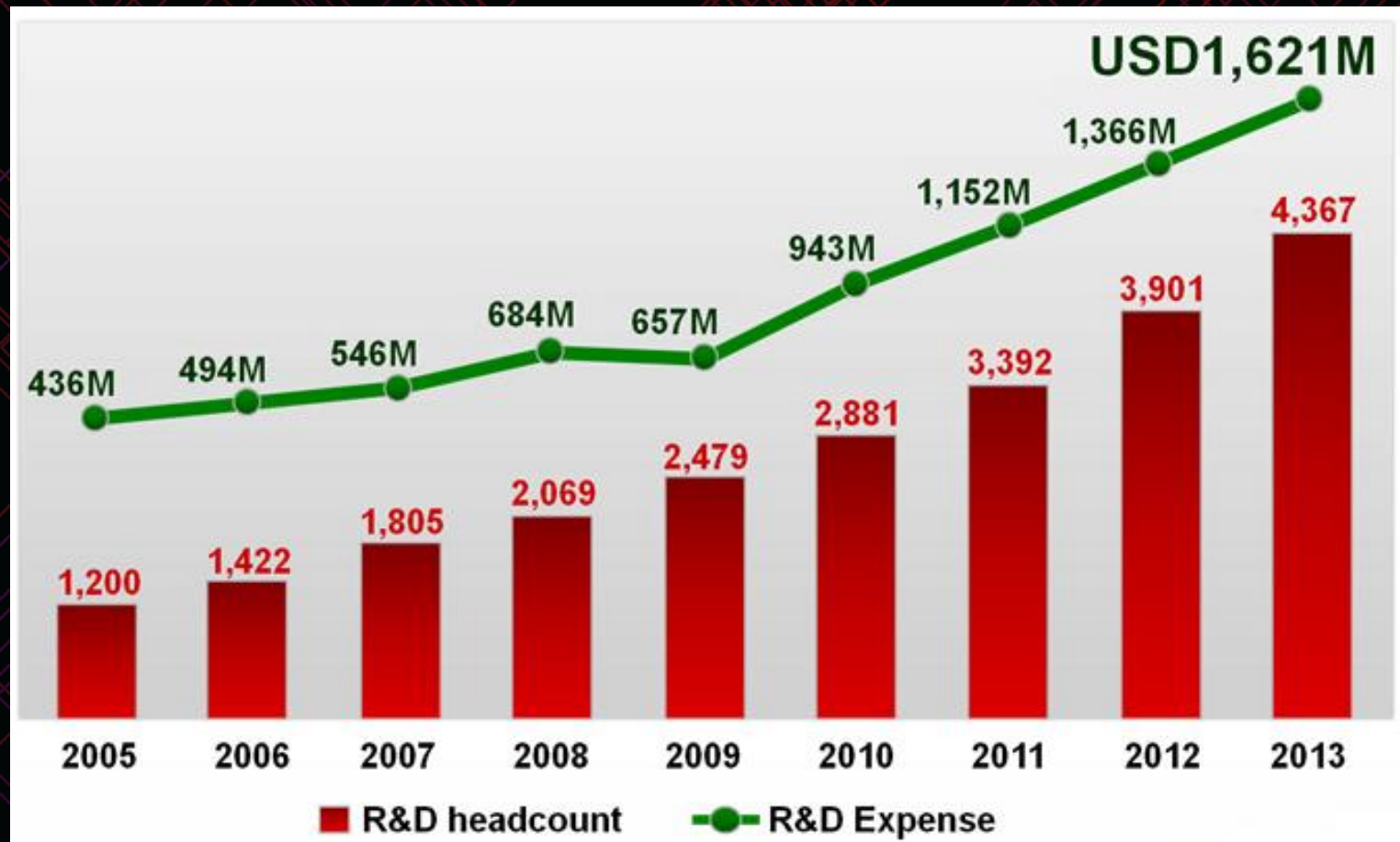
Wide Technology Portfolio



TSMC Technology Roadmap



TSMC is Committed to Invest in Technology Advancement



Proven Specialty Technology Manufacturing Record





Committed to
manufacturing excellence

8" Equivalent
Wafers



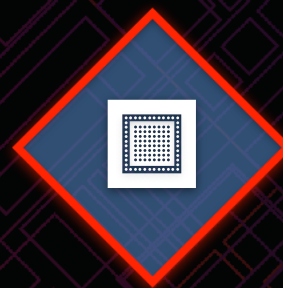
16M+

Customers



440+

Different
Technologies



200+

Different
Products



8600+

TSMC's Fab Spectrum – 12" Gigafabs

GIGAFAB 12



P1+P2



P3



P4



P5



P6



P7
(Under construction)

GIGAFAB 14



P1+P2



P3



P4



P5 (Ramping)



P6 (Ramping)



P7
(Under construction)

GIGAFAB 15



P1+P2



P3+P4

TSMC's Fab Spectrum – 6" & 8" Fabs

6" & 8" Fabs



Fab 2



Fab 6



Fab 11 *(USA)*



Fab 3



Fab 8



Vanguard
(Affiliate Fab)



Fab 5



Fab 10 *(China)*



SSMC *(Singapore)*
(Affiliate Fab)

Backend Fabs

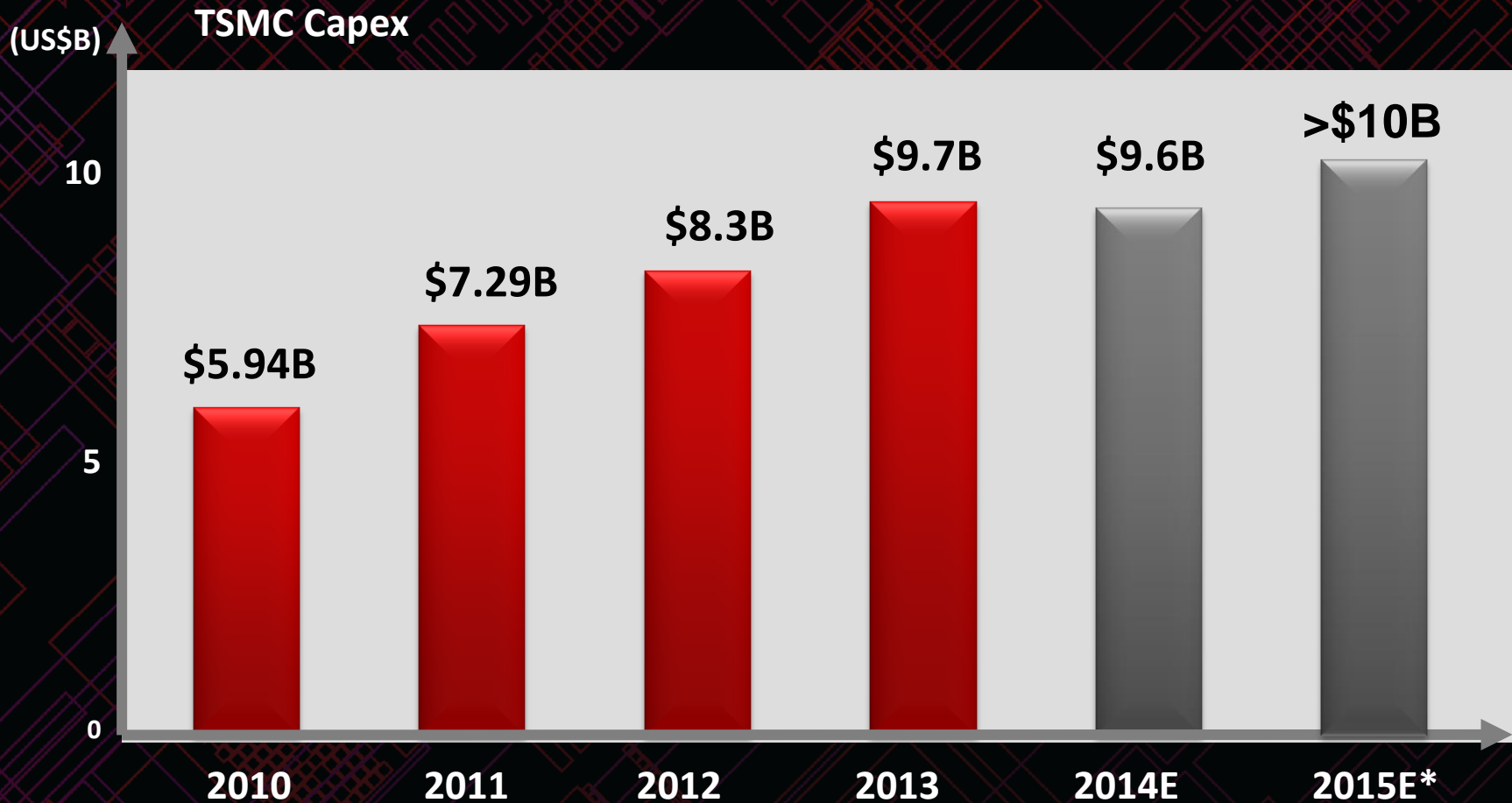


Backend Fab 1



Backend Fab 2

The Trusted Technology and Capacity Provider

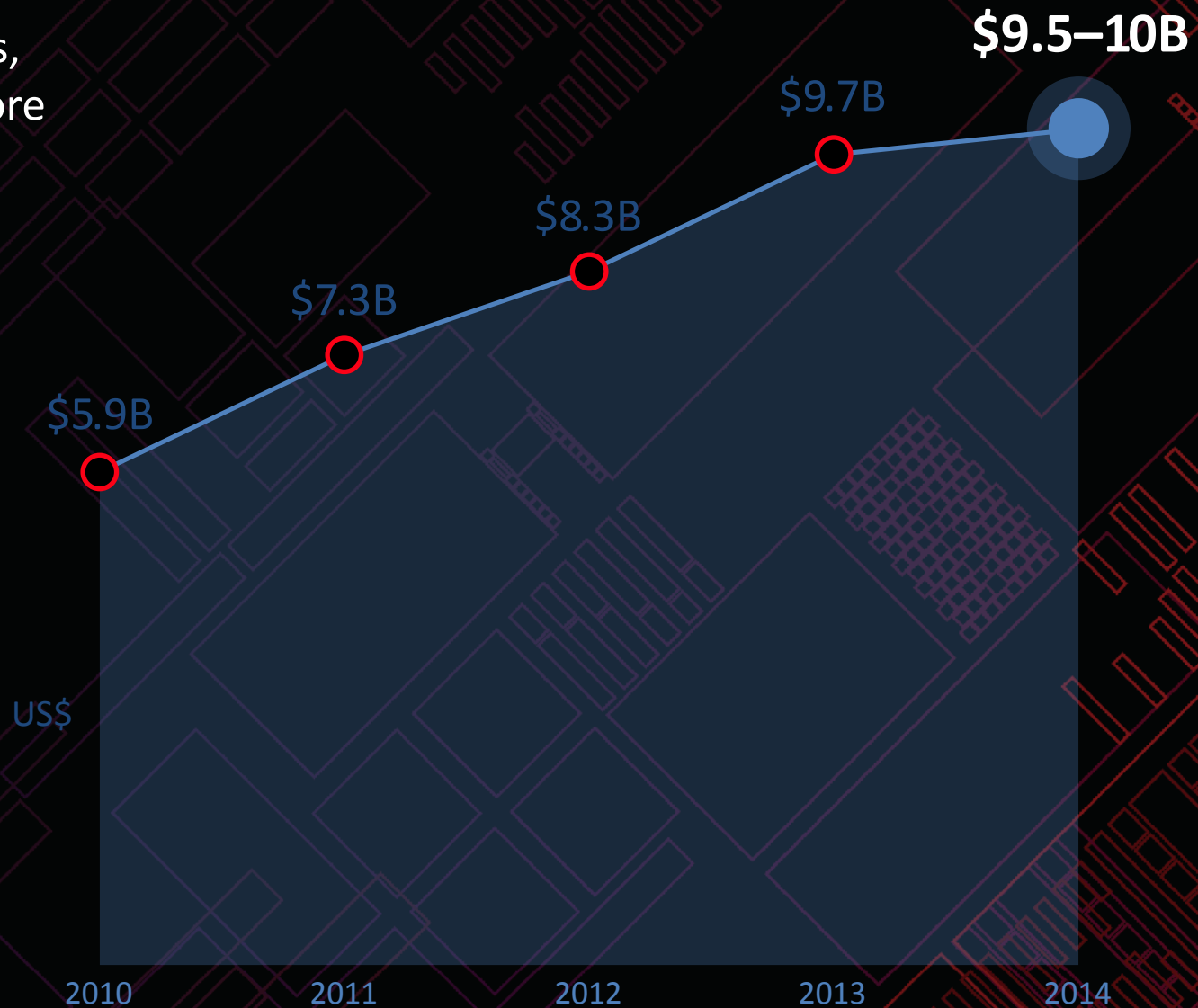


* Slightly higher than \$10B

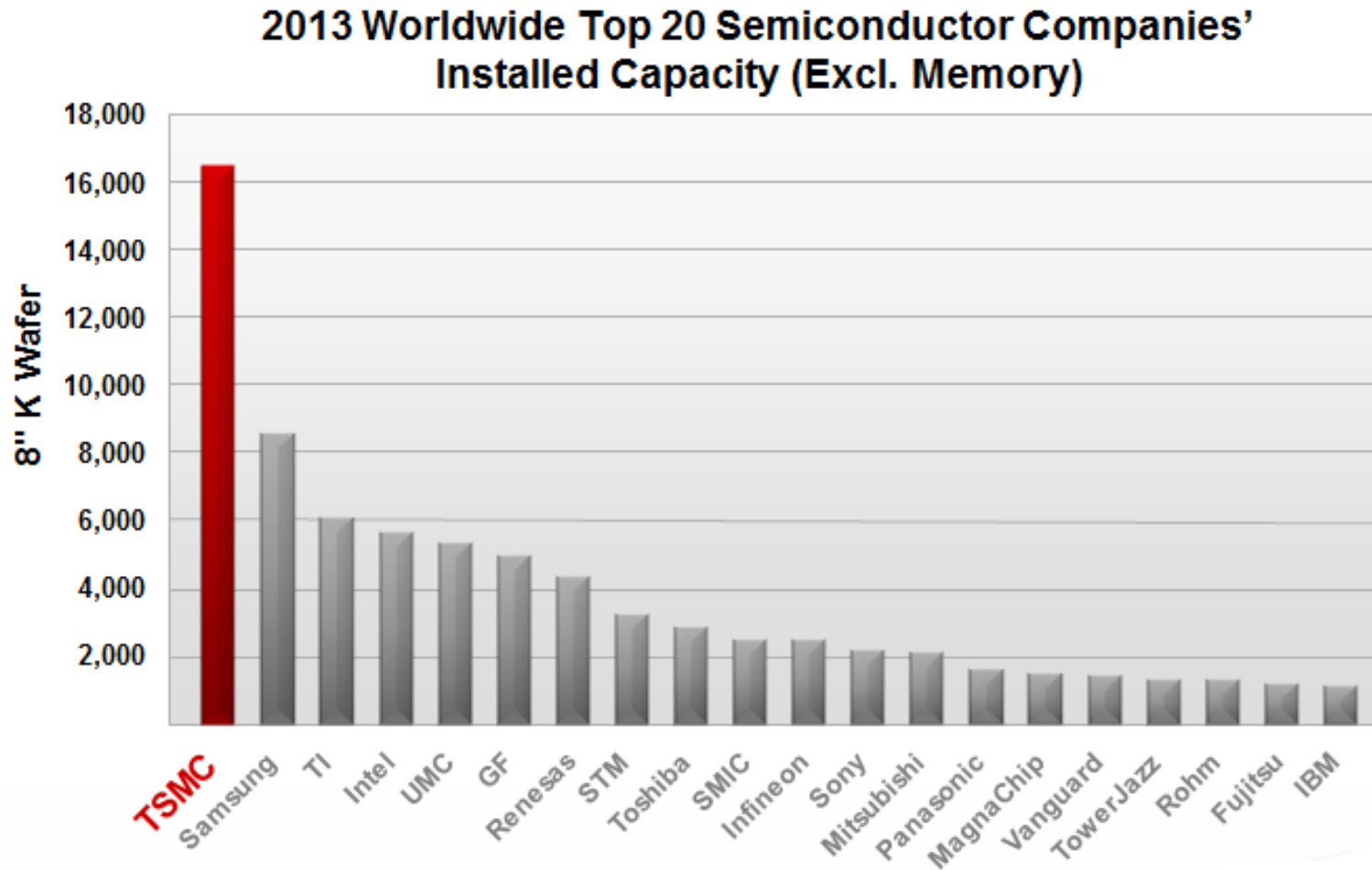
In the past four years,
TSMC have spent more
than

\$31B

capital
investments



TSMC Capacity Leadership

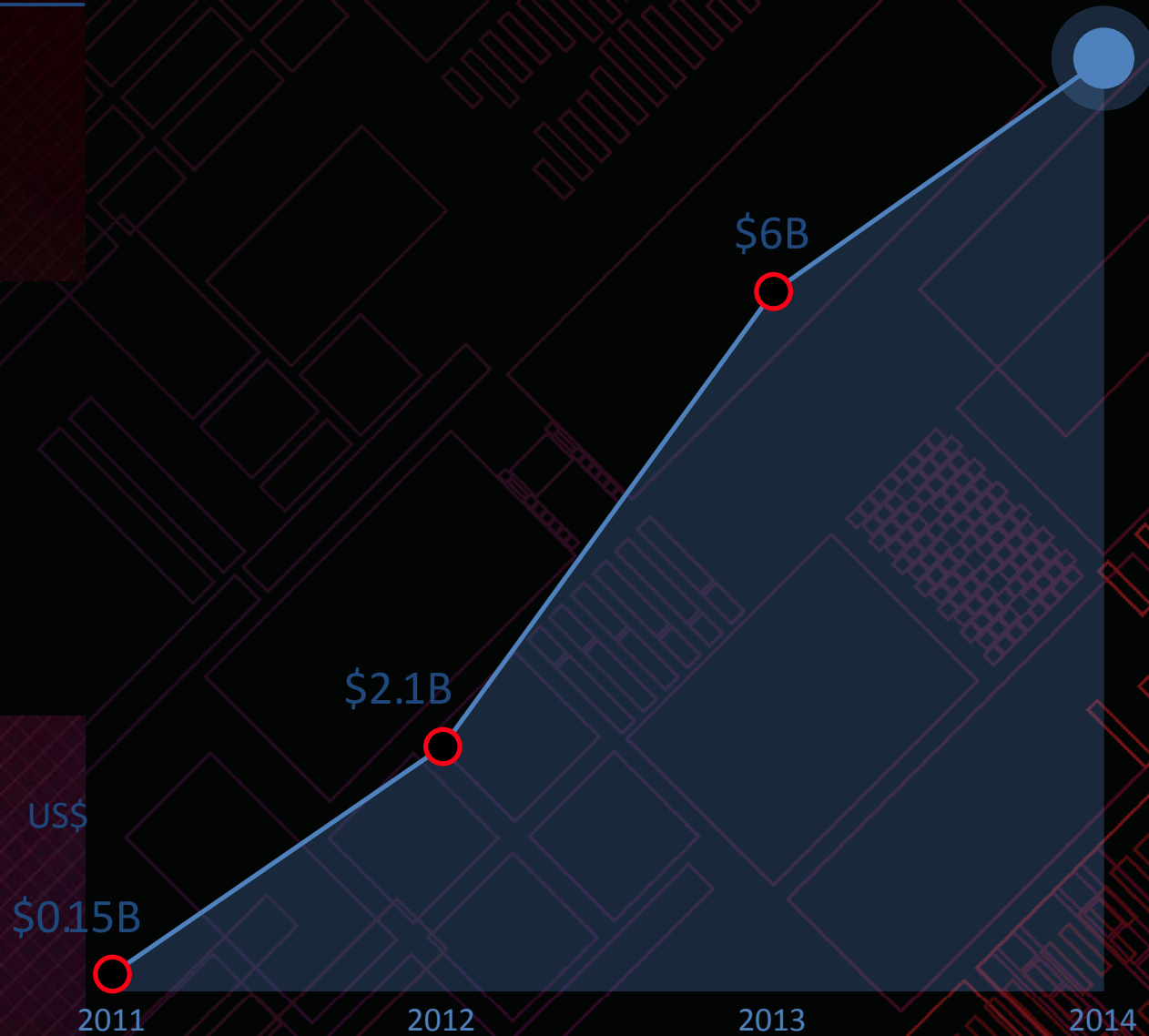


Source: Gartner and TSMC

28nm
Volume
Production

YEAR

1





HKMG:

28HP

28HPL

28HPM

28HPC

- 85% of total 28nm 2014 revenues

HKMG:

28HP

28HPL

28HPM

28HPC

- 85% of total 28nm 2014 revenues
- More customers using TSMC's 28HPM in 2014
- 105 tape-outs schedule from about 60 customers
- 28HPM includes a speed gain of more than 30% over 28LP

HKMG:

28HP

28HPL

28HPM

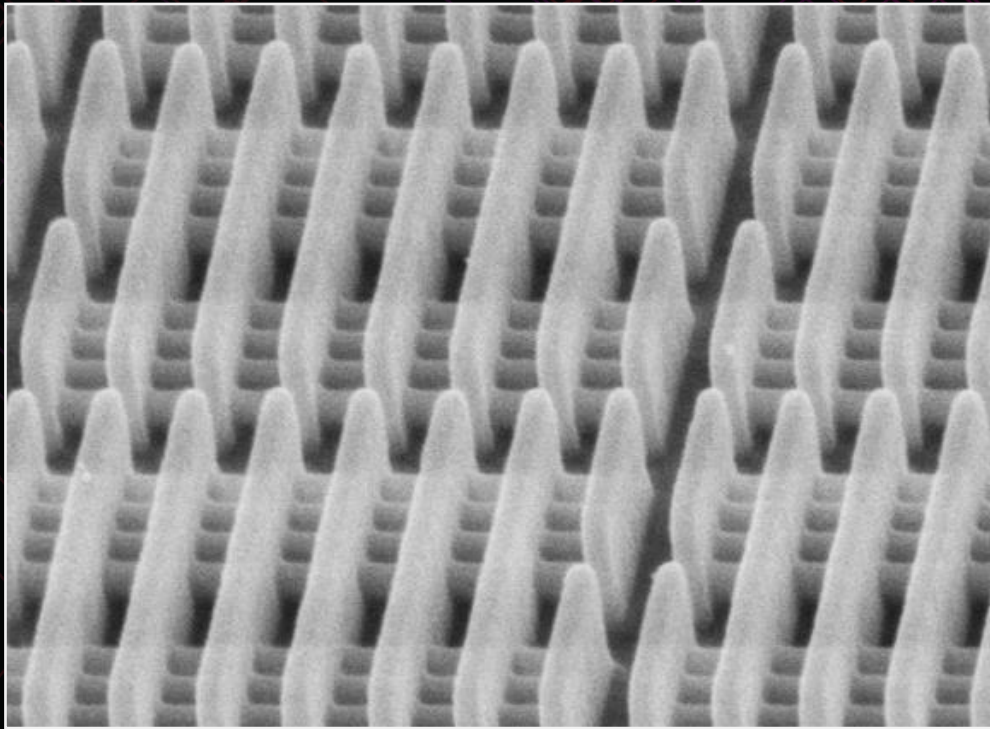
28HPC

- Developed 28HPC to meet mid-to-low-end smartphone market
- Uses a high-K metal gate solution
- Offers performance superior to 28LP
- Expects strong demand in the next two years
- More than 80 tape-outs scheduled from about 30 customers



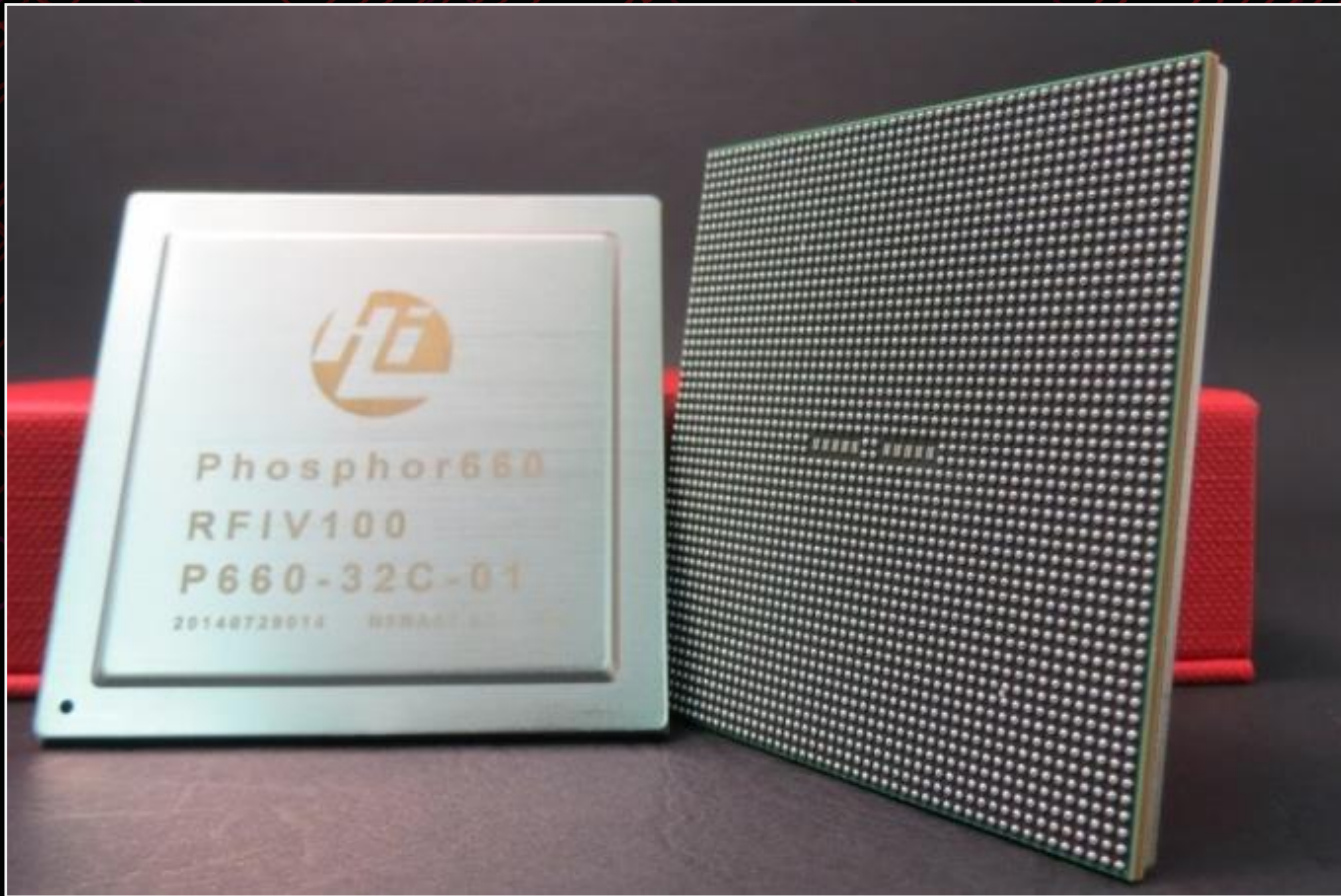
20SoC Ramp

- Fastest ramp in TSMC history
- Highest gate density in the industry



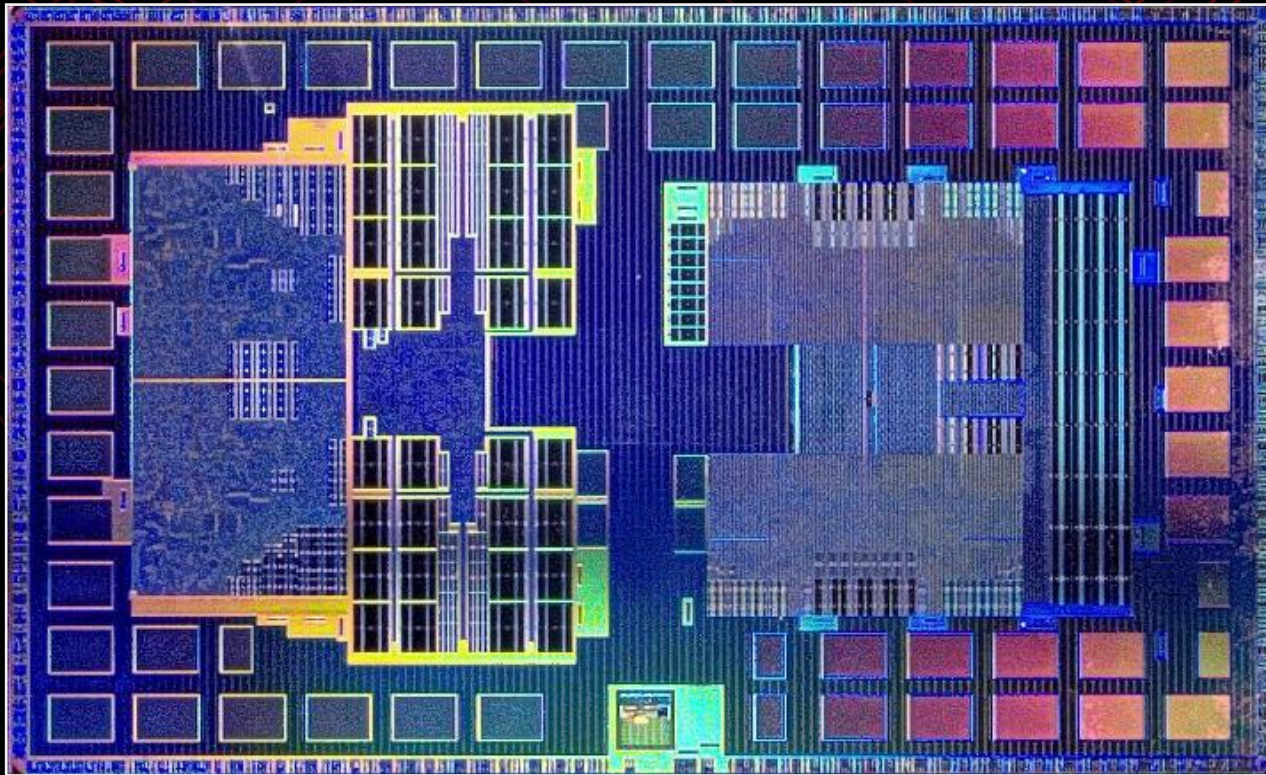
16nm

World's first 16nm network processor



- Two 16nm core function chips and one 28nm I/O chip
- Industry's first heterogeneous CoWoS[®] integration

Industry's first 16nm Cortex-A57 and A53 big.LITTLE silicon results



- Power reduction by 30% or performance gain by 20% over 20nm
- Expect to further reduce power by 20%



16nm product tape-out

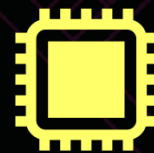
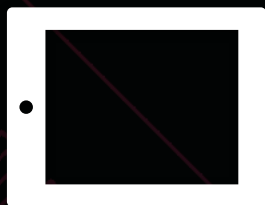
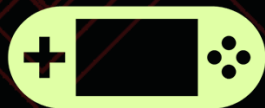
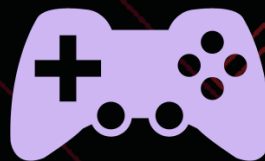
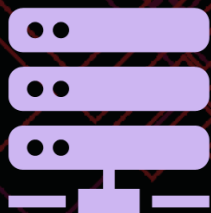
10 for 2014

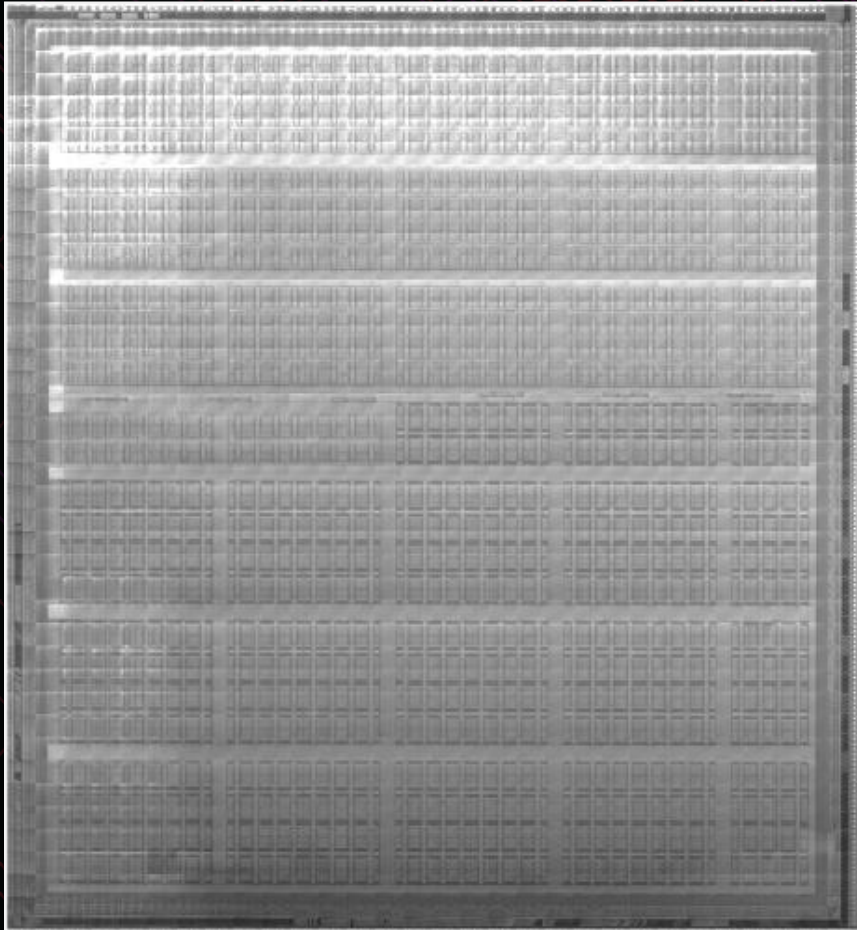
45 for 2015

16nm OIP ecosystem

40 EDA tools

700 IPs





10nm

10nm key milestones

Customer tape-outs in **2H 2015**

Risk production in **4Q 2015**

Customer product ramp in **2016**

Speed



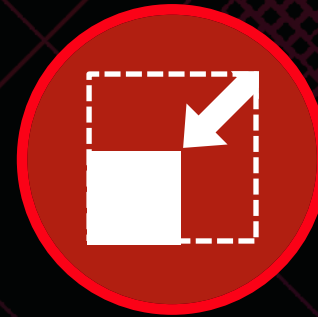
25%

Power

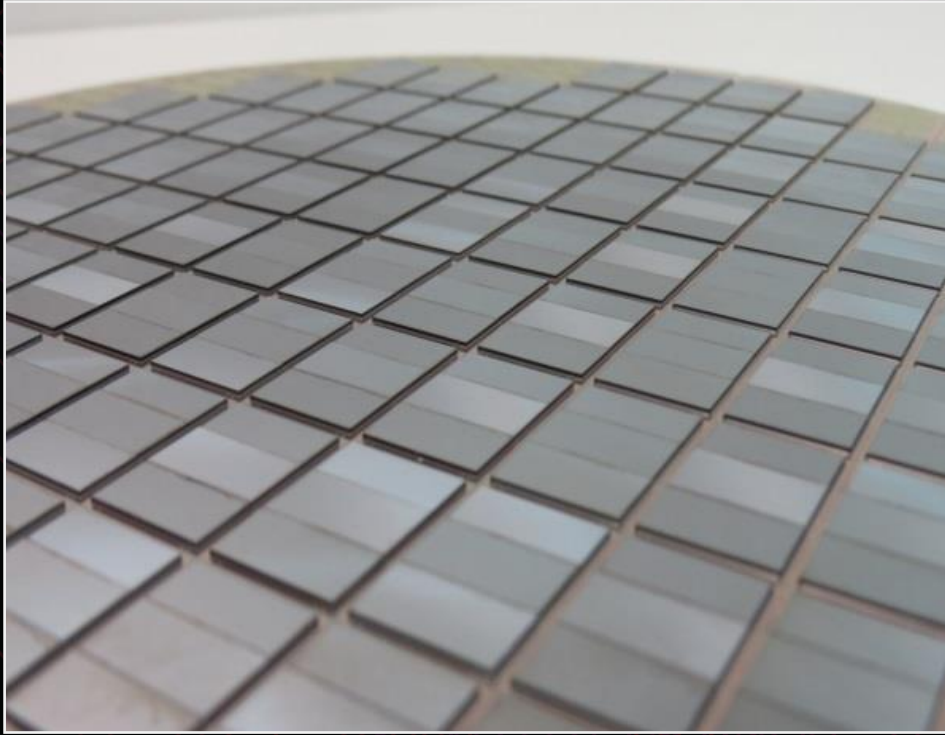


45%

Density

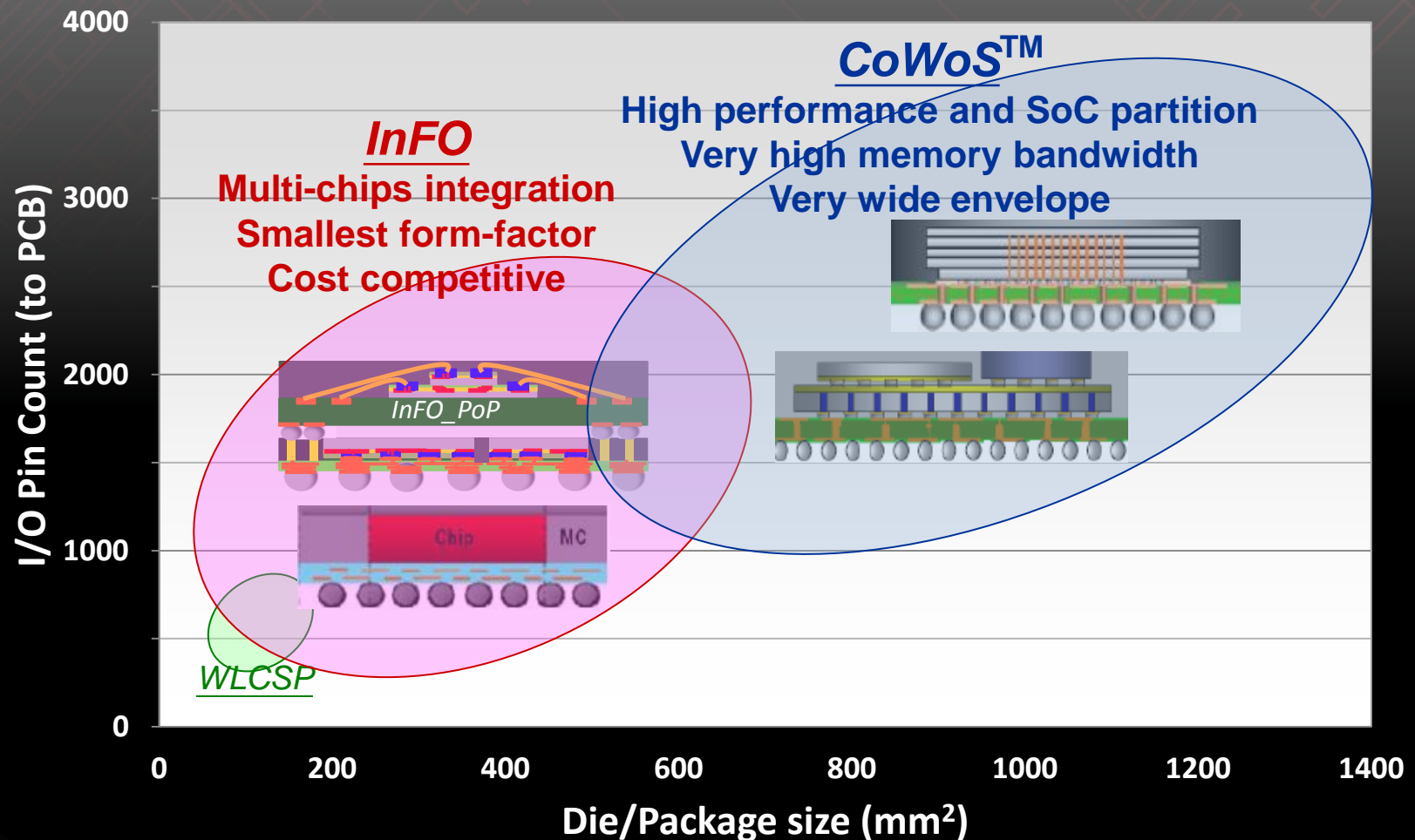


2.2X



TSMC CoWoS and InFO

TSMC Advanced Packaging Technologies





28nm CoWoS

in production for 2 years

16nm InFO

volume production in 2016



Internet
of Things



\$1.9T+

Worldwide
Mobile Traffic



127EB+

Apps
Downloaded



268B+

Personal
Cloud Storage

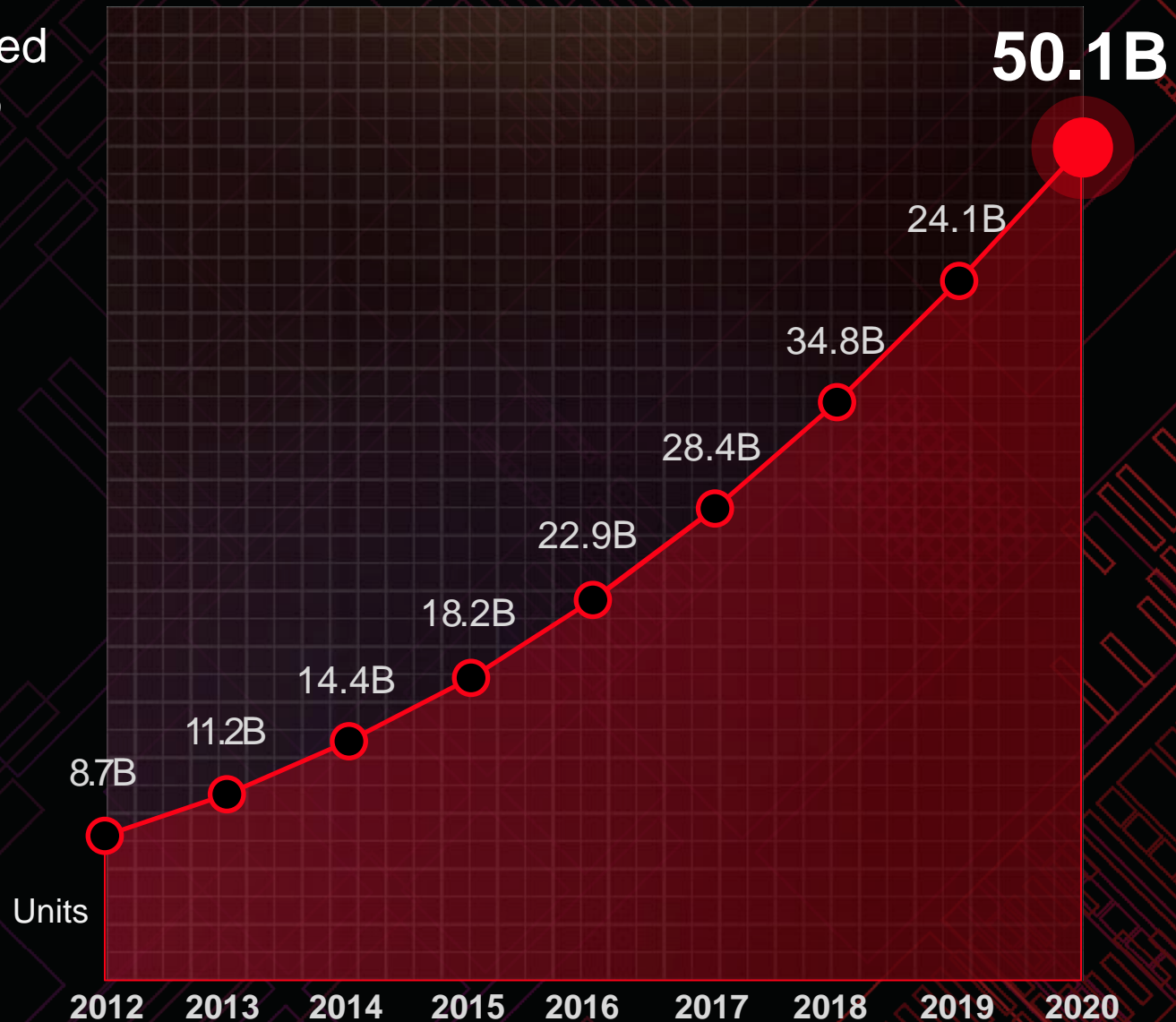


3500PB+

Number of connected
objects expected to
reach

50B

by 2020



Sensor



Processor



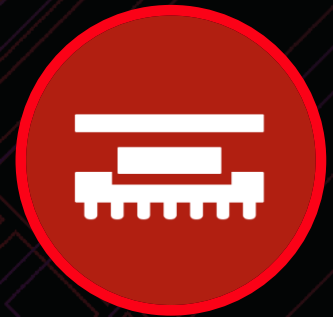
Wireless
connectivity



PMIC



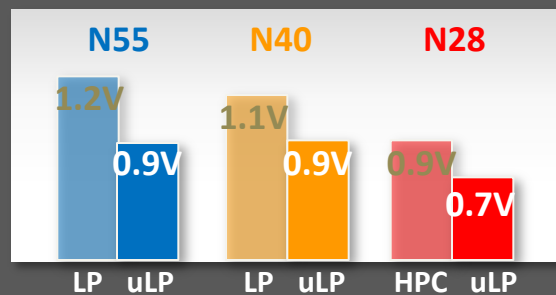
Advanced
packaging



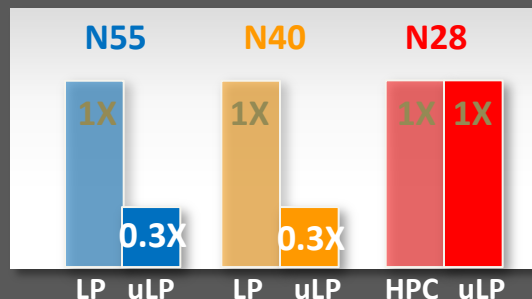
Ultra-low power capability

Ultra-Low-Power Technology Offering

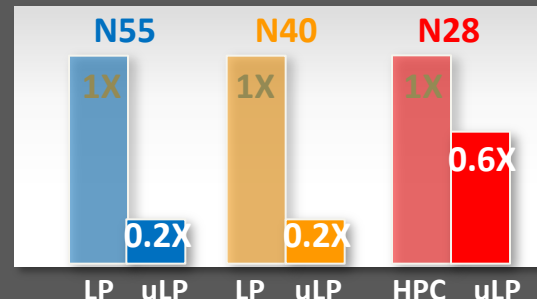
Lower V_{dd} for Power Reduction



High-Vt Device for Leakage Control

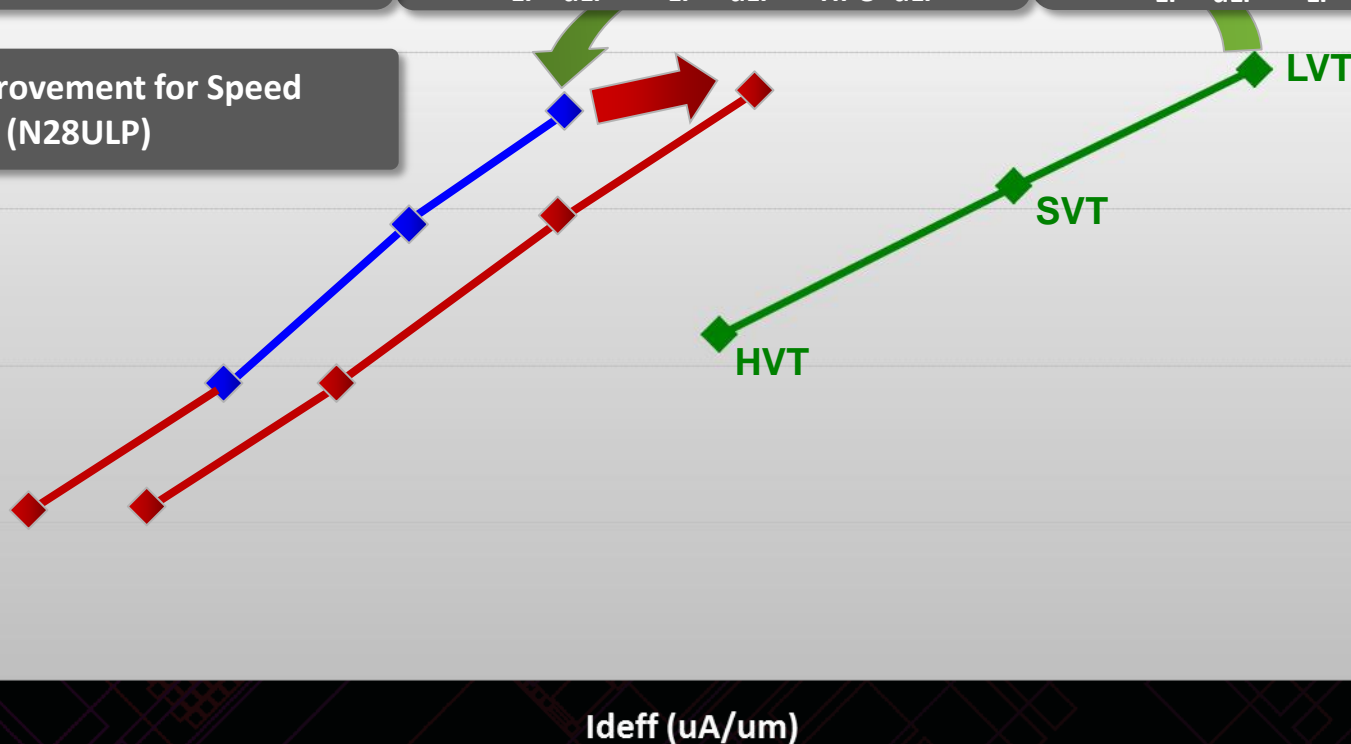


Low-leakage SRAM Bit Cell



I_{eff} Improvement for Speed
(N28ULP)

I_{off} (pA/um)





**Committed to
Technology Leadership**

The Most Powerful Innovation Force





Collaborate to innovate

